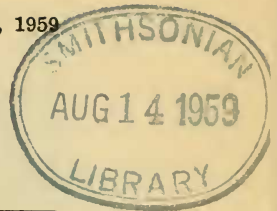


PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON



A NEW STAR-NOSED MOLE (*CONDYLURA*) FROM
THE SOUTHEASTERN UNITED STATES

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According to Jackson (*North American Fauna*, No. 38, 1915, p. 90) the star-nosed mole exhibits but slight variation over a wide zonal range. Specimens from the Lower Austral Zone in Georgia and Virginia are subspecifically inseparable from those of the Boreal Zone in Quebec and Labrador. Since Jackson's review, however, additional specimens from the southeastern United States, as well as more abundant material from the type locality, indicate that a well-marked subspecies occurs throughout the southeastern States. It is here named:

Condylura cristata parva, subsp. nov.

Holotype.—U. S. National Museum No. 293291; adult male, skin and skull (skull well ossified, maxillary and nasal bones fused, tail enlarged); collected Dec. 2, 1939, by Leonard Llewellyn 5 mi. NW. of Stuart, Patrick Co., Virginia.

Distribution.—In the southern Appalachian mountains distribution extends from southeastern West Virginia and southwestern Virginia, south to western North Carolina and eastern Tennessee. In the Coastal Plain it occurs from Nansemond Co. (Dismal Swamp) and possibly Accomack Co., Virginia, to Georgia. (See map.)

When more intensive collecting is done in the piedmont section of the Carolinas, it may be found that there is a continuous distribution from the Coastal Plain to the mountains. At present, however, there are no valid records from this area. The southernmost piedmont specimens reported (not examined but, perhaps, representing *parva*) are from the Richmond, Virginia area (Bailey, *Mammals of Virginia*, 1946, p. 92).

Description.—Similar to *Condylura cristata cristata* but much smaller, both externally and cranially; tail shorter; upper "unicuspid" tooththrow (anterior base of I3 to posterior base of Pm3) more crowded; upper "molariform" tooththrow (anterior base of Pm4 to posterior base of M3) relatively larger; interorbital breadth relatively greater; cranium flatter and narrower; rostrum narrower.

Measurements.—Detailed measurements (as outlined by Jackson [loc. cit.]) of *Condylura c. parva* are given in the accompanying table.

Several specimens representing *parva* were examined from which it was

impossible to obtain measurements. A skin of undetermined age, taken in 1917 (?), was obtained from a local trapper by Dr. Francis Harper at Mixons Ferry, Okefenokee Swamp, Georgia, and is in the collection at Cornell University.

Three North Carolina specimens preserved in alcohol, are in the North Carolina State Museum at Raleigh. One adult, collected by R. G. Vick on August 4, 1947, at Hayesville, Clay Co., North Carolina, is very small, with a short, swollen tail, and small feet. Two specimens (1 juvenile and 1 adult) with no exact locality data but probably those mentioned by C. E. Brimley (*Jour. Mamm.*, Vol. 4, No. 3, August 1923, pp. 183-184) as being from Garland, Sampson Co., and Wenona, Washington Co., also appear to represent this subspecies.

Comparative measurements.—The following measurements of adult *Condylura c. cristata* are given to show the size variation and as an aid in comparing it with *parva*.

Ten specimens from Cambridge, Massachusetts, measure (in millimeters; averages followed by extremes): Total length, 199.8 (195–208); tail vertebrae, 78.1 (76–83); hind foot, 28.4 (27–30); length of skull (average of 7); 34.6 (33.4–35.5); palatilar length (average of 8), 13.9 (13.3–14.3); mastoidal breadth (average of 7), 13.8 (13.5–14.1); interorbital breadth (average of 7), 7.3 (7.1–7.5); upper “molariform” toothrow (average of 7), 6.6 (6.4–6.9); upper “unicuspid” toothrow (average of 8), 7.8 (7.4–8.1); height of brain case (average of 7), 10.0 (9.6–10.3); maxillary breadth (average of 8), 8.7 (8.6–8.9).

An adult skull from Chester Co., Pennsylvania, (near the type locality of *cristata*) measures: Length of skull, 33.9; palatilar length, 13.7; mastoidal breadth, 13.2; interorbital breadth, 6.9; upper “molariform” toothrow, 6.4; upper “unicuspid” toothrow, 7.3; height of braincase, 9.8; maxillary breadth, 7.8.

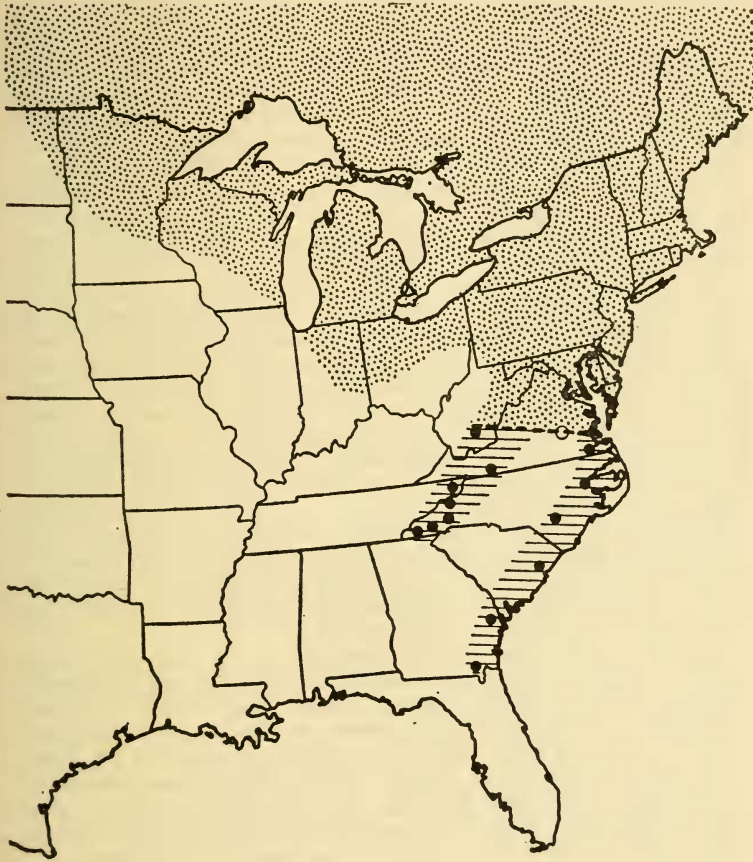
Remarks.—*Condylura cristata cristata* is best differentiated in the northern part of its range. Eastern Pennsylvania, the type locality, is within the zone of intergradation between *cristata* and *parva*. Intergrading populations occur also in Maryland, northeastern West Virginia and northern Virginia (south to Callao).


When more specimens become available, it may develop that the southern Appalachian mountain and southern Coastal Plain populations, which seem to be geographically isolated, are morphologically distinct. At present, however, no differences are apparent.


An entirely satisfactory aging technique was not developed during this study. The criteria used to distinguish adult animals are: Worn teeth; a distinctly swollen tail; an opaqueness and solidity of the skull; flatness of the cranium; and time of year when taken.

From examination of very young animals in the collection at the U. S. National Museum, it appears that maximum size in this species is reached at a very early age. Specimens in which fusion of the maxillaries and nasals has occurred at the anterior portion of the rostrum probably represent fully grown individuals.

Specimens examined.—*Condylura cristata cristata* (all in collections at U. S. National Museum; skins and skulls unless otherwise noted). 145 as follows—*Connecticut*: East Hartford, 1; Monroe, 1 (skeleton); Norfolk, 1 (alcoholic). *Delaware*: Fort Delaware, 4. *District of Colum-*



 *Condylura cristata cristata*

 *condylura cristata parva*

● Specimens examined
○ Specimen not examined

Distribution of *Condylura cristata* in the United States
(with collecting localities of *C. c. parva*)

bia: 10 (1 alcoholic). *Maine*: Eastport, 1 (alcoholic); Freeport, 1; Oakland, 1; Penobscot River (East Branch), 2; Small Point, 1. *Maryland*: Beltsville, 1; Brookville, 1; Burnt Mills, 1 (skeleton); Cabin John, 1 (alcoholic); Chevy Chase, 1; Chevy Chase Lake, 1; Colledge Park, 2 (1 alcoholic); Ellicott City, 1 (skull only); Glendale, 1; Lanham, 1; Laurel, 2; Marshall Hall, 1; Potomac P.O., 1; Prince Georges Co., 1; Silver Spring, 1; Woodside, 2 (alcoholics). *Massachusetts*: Cambridge, 10; Gardner, 1 (alcoholic); Harvard, 1; Lunenburg, 3; Middleboro, 2; New Bedford, 1 (alcoholic); Newburyport, 2; North Abington, 1; Williamstown, 1 (alcoholic). *Minnesota*: Elk River, 1; Fort Ripley, 1; Margie, 1 (alcoholic). *New Hampshire*: Ossipee, 5. *New Jersey*: no exact locality, 1 (alcoholic); Lake Hopateong, 5. *New York*: Cross River, 1 (alcoholic); Essex Co., 1 (alcoholic); Geneva, 2 (alcoholic); Lake George, 2; Lockport, 1; Locust Grove, 12 (5 alcoholics, 1 skin only); Lyons Falls, 1; New York City, 2 (1 alcoholic); St. Lawrence Co., 1; Sing Sing, 3 (skins only). *Ohio*: Cleveland, 1; Ellsworth, 1 (alcoholic); Garrettsville, 3. *Ontario*: Hudson Bay, Moose Factory, 1 (skeleton); Ottawa, 1. *Pennsylvania*: Ardmore, 1 (skull only); Bucks Co., SW. of Falsington, near Delaware Canal, 1 (skull and partial skeleton from owl pellet); Carlisle, 2 (1 skeleton, 1 alcoholic); Chester Co., 1 (skull); Eddington, 1 (skin only); Feather Field Farm, Blueball, Montgomery Co., 1; Germantown, 1 (skin only); Hartsville, 1 (skull only); Holmesburg, Philadelphia, 1; Lake Leigh, 1; Lycoming Co., 1; Meadville, 2 (alcoholics); Radnor, 1 (skin only); Shermans Dale, Perry Co., 1; Tinicum, 1 (skull only); Williamsport, 1. *Quebec*: Grosse Isle, 1; Montreal, 1. *Vermont*: Mt. Mansfield, 2; Rutland, 1. *Virginia*: Calao, 1 (skeleton); Falls Church, 2; Lebanon, Lorton, 2. *West Virginia*: Cranberry Glades, 1. *Wisconsin*: Colby, 1; Delmar Township, Chippewa Co., 1; Herbster, 1 (skull); St. Croix Falls, 1 (skull only); Solon Springs, 4.

Condylura cristata parva (in collections at U. S. National Museum except as noted). 17 as follows—*Georgia*: Marlow, 1 adult (alcoholic, skull removed); Okefenokee Swamp, Mixons Ferry (Cornell University Collection) 1, age? (skull inside). *South Carolina*: South Island Road, 2.5 mi. S. of Georgetown, (Charleston Museum collection) 1 yg. adult. *North Carolina*: Hayesville, (North Carolina State Museum collection) 1 adult (alcoholic); Roan Mountain, Magnetic City, 1 adult, 1 young adult; Weaverville, (Museum of Comparative Zoology collection) 1 adult; Waynesville, Haywood Co., (North Carolina State College collection) 1, age?; no exact locality but presumed to be from Garland, Sampson Co., and Wenona, Washington Co., (North Carolina State Museum collection) 2 (alcoholics). *Tennessee*: Shady Valley, 1, Age? *Virginia*: Dismal Swamp, 3 young adults, 1 adult (alcoholic, skull removed); 5 mi. NW. of Stuart, Patrick Co., 1 adult (type); Accomack Co., Wattsville, 2.3 mi. E., 1 immature. *West Virginia*: Greenbrier Co., 4.2 mi. NE. of Richwood, (West Virginia Mammal Survey collection) 1 immature.

I am grateful to the following for the loan of material: The Charleston Museum, Charleston, South Carolina; The North Carolina State Museum, Raleigh, North Carolina; North Carolina State College, Raleigh, North Carolina; The West Virginia Mammal Survey; Cornell University, Ithaca, New York; The Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts; and The Academy of Natural Sciences of Philadelphia.

EXTERNAL AND CRANIAL MEASUREMENTS OF *CONDYLURA CRISTATA*
PAEVA

| Locality | Collection | Cat. No. | Sex | Age | Date | Total length | Tail | Hind foot | Greatest length of skull | Palatal length | Mastoid length | Interorbital breadth | Upper "molariform" toothrow (Pm4 to M3) | Upper "uncuspid" toothrow (I3 to Pm3) | Height of braincase | Maxillary breadth |
|-------------------------------|-------------|----------|-----|---------|--------------|--------------|------|-----------|--------------------------|----------------|----------------|----------------------|---|---------------------------------------|---------------------|-------------------|
| South Carolina: South Island | Charleston | 54.54 | ♂ | ad. | 3 IV 1954 | 165 | 58 | 25 | 32.4 | 12.4 | 12.6 | 6.9 | 6.3 | 6.7 | 9.0 | 7.8 |
| Rd., 2½ mi. S Georgetown | Museum | | | | | | | | | | | | | | | |
| North Carolina: Weaverville | MCZ | 5399 | ♂ | ad. | 6 II 1896 | --- | --- | --- | --- | 12.3 | --- | 6.7 | 6.5 | 6.1 | --- | 7.7 |
| North Carolina: Roan Mt., | USNM | 66300 | ♂ | ad. | 15 III 1894 | 158* | 57* | 26* | 31.6 | 12.1 | --- | 6.9 | 6.4 | 6.5 | 8.8 | 7.9 |
| Magnetic City | | | | | | | | | | | | | | | | |
| North Carolina: Roan Mt., | USNM | 91519 | ♂ | ad. | 15 VIII 1895 | --- | --- | --- | --- | 31.4 | 12.6 | 6.9 | --- | 6.8 | 9.2 | 7.8 |
| North Carolina: Magnetic City | | | | | | | | | | | | | | | | |
| Virginia: Patrick Co., | USNM | 293291 | ♂ | ad. | 2 XII 1939 | 160 | 60 | 25 | 32.2 | 12.4 | 12.6 | 6.9 | 6.4 | 7.0 | 8.7 | 7.9 |
| 5 mi. NW Stuart | | | | | | | | | | | | | | | | |
| Virginia: Dismal Swamp | USNM | 78041 | ♂ | ad. | 1 V 1896 | --- | 58# | 25# | --- | 12.8 | --- | 6.8 | 6.2 | 6.9 | --- | 7.8 |
| Virginia: Dismal Swamp | USNM | 77815 | ♂ | vg. ad. | 7 V 1896 | 165 | 63 | 25 | --- | 12.4 | 13.4 | 6.8 | 6.2 | 6.5 | 9.4 | 7.7 |
| Virginia: Dismal Swamp | USNM | 77813 | ♀ | vg. ad. | 24 IV 1896 | 170 | 62 | 25 | 32.2 | 12.8 | 13.1 | 7.0 | 6.2 | 6.9 | 9.2 | 8.0 |
| Virginia: Dismal Swamp | USNM | 77814 | ♀ | vg. ad. | 5 V 1896 | 165 | 62 | 25 | 31.3 | 11.9 | 12.9 | 6.9 | 5.8 | 6.5 | 9.3 | 7.4 |
| Virginia: Wattsville, | USNM | 307428 | ♂ | imm. | 11 VI 1958 | 169 | 59 | 25 | 31.0 | 11.4 | 12.4 | 6.5 | 6.0 | 6.4 | 9.5 | 7.5 |
| 2 3/10 mi. E | | | | | | | | | | | | | | | | |
| Tennessee: Shady Valley | USNM | 267140 | ♀ | ♀ | 13 VI 1937 | --- | --- | --- | --- | 12.4 | --- | --- | --- | --- | --- | 7.8 |
| West Virginia: Richwood, | Mamm. Surv. | WVMS | ♀ | imm. | ----- | 166 | 57 | 24 | 30.8 | 12.2 | 12.0 | 6.5 | 6.0 | 6.5 | 9.2 | --- |
| 4.2 mi. NE | W. Va. | 900 | | | | | | | | | | | | | | |
| Georgia: Marlow | USNM (alc.) | 180989 | ♀ | ad. | 2 III 1913 | --- | 56# | 25# | --- | --- | --- | --- | 6.0 | 6.4 | --- | --- |

* inches transposed to mm.

from alcoholic skin